

Green Hybrid Roofing™



AMERICAN MADE AND OWNED

CBIA Title 24 2016 Forum

November 21, 2014

Who We Are

- Green Hybrid Roofing™
- Worlds first and only manufacturer of insulating roofing tile
- Subsidiary of Ensoltis®, Inc.
- Founded in 2005 by building contractors
- Patented
- American made and owned



Manufacturing, Distribution and Market



- 5-acre manufacturing facility in Madera, CA
- Sell into CA, NV, AZ and HI market, beginning to expand nationwide
- Over 300,000 square feet of product installed

The Problem

- Cooling and heating homes uses a tremendous amount of energy
- Attics are a major source of HVAC inefficiency
- Hot attics create two problems:
 - Heat transfers to the inside of the home
 - Heat transfers to A/C ducts



Our Solution

- Stop the heat *before* it gets to the attic—at the outermost layer of the building envelope
- Replaces concrete and clay tile used in today's construction
- Hybrid Construction
 - High-density, UL certified, expanded polystyrene foam core
 - Alkaline-resistant fiberglass mesh
 - Encased in high-strength polymer-reinforced concrete coating

Attractive outward appearance, but.....



What really matters is on the INSIDE

Product Features



- Emulates the look of shake, concrete or clay tile
 - 6 popular styles
 - Available in 6 standard colors
 - Custom colors on request
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- All GHR products can be used in new or existing construction without altering the structure

Ensoshake Collection



The traditional look of wood shake, plus all of the benefits of our patented hybrid construction:

Energy saving - Lightweight - Freeze resistant
Fire rated (Class A) - Wind resistant (120 mph)
Durable - Easy install - Walkable

Ensocrete Collection



The traditional look of concrete tile, plus all of the benefits of our patented hybrid construction:

Energy saving - Lightweight - Freeze resistant
Fire rated (Class A) - Wind resistant (120 mph)
Durable - Easy install - Walkable

Ensoclay Collection



The traditional look of clay tile, plus all of the benefits of our patented hybrid construction:

Energy saving - Lightweight - Freeze resistant
Fire rated (Class A) - Wind resistant (120 mph)
Durable - Easy install - Walkable

Energy Benefits

- R-4 to R-5 lab-tested insulation (tiles alone)
 - Much higher installed assembly R-value
- Attic temperature reduction of 50 degrees or more
- Reduced thermal losses from ducts
- Cool Roof Rating Council (CRRC) Rated:
 - Emissivity: 0.91 to 0.94
 - Reflectance: 0.18 to 0.34
- Solar compatible



Other Benefits

- Lightweight—50% lighter than conventional concrete tile
- Walkable—850 pounds-per-foot
- Fire safe—class A rating, independent lab tested
- Wind resistant—120 mph
- Freeze resistant—tested to negative 20° Fahrenheit
- Preserves roofing system integrity—protects underlayment from heat
- Warranty—lifetime, one-time transferable



Installation Benefits

- 50% faster to install than conventional tile
- Lightweight and strong
 - Twice the amount of tile per truck load
 - Reduced carbon footprint
 - Can be stacked high and moved by hand
 - Reduced product loss due to breakage=cost savings

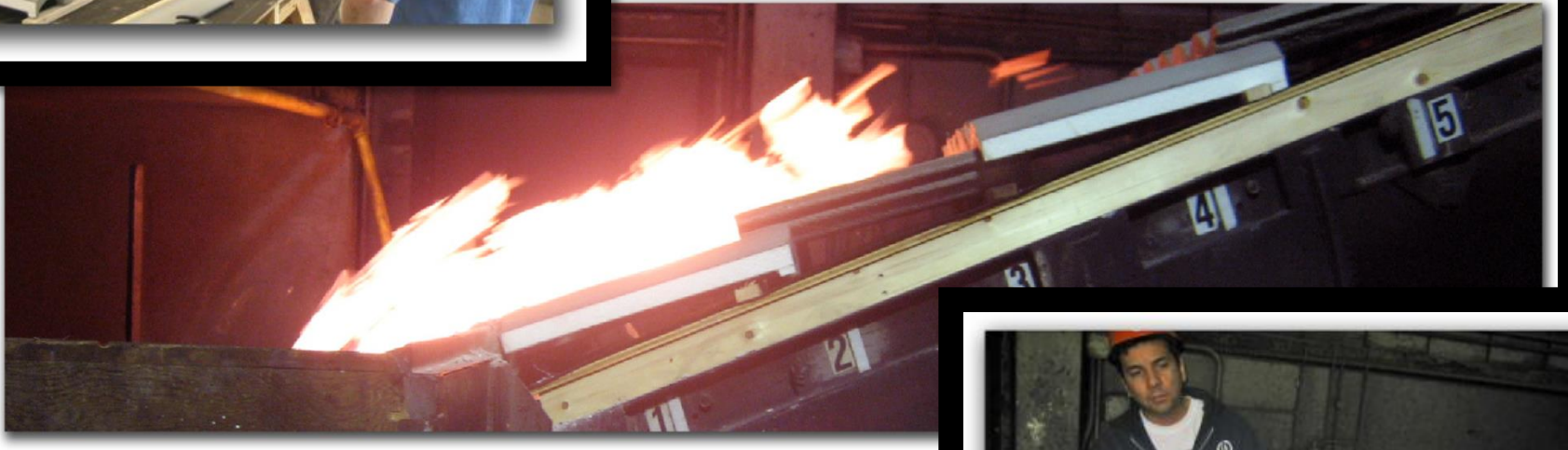


Installation Benefits

- Easy to install
 - Custom cut on-site
 - Walkable
 - Two nails/no drilling necessary
 - Fewer pieces per square than standard roofing tiles



Independent Lab Testing



Tests Completed

- ICC-ES Certified (Report ESR-2904)
- Class A Fire Rating: ASTM E108-08
- Weather meter – ACo7 3.4.5.
- Initial Flex – ACo7 3.3.10.
- Accelerated Aging with/ flex test- ACo7 3.4.7.
- Salt Spray – ACo7 3.4.8.
- Wind Resistance – ACo7 3.4.9., 4.3.
- Uplift Bend – ACo7 3.4.10., 4.4.
- Penetration – ACo7 3.4.11., 4.5.
- Permeability – ACo7 3.4.13., 4.7.
- Freeze Thaw – ACo7 3.4.14
- Water Absorption – ACo7 3.4.14.
- Wet/ Dry Cycling – ACo7 3.4.16.
- Installed Weight - ACo7 3.4.2. & 4.11.
- Dimensions and Weight- ACo7 3.4.2.
- Thermal Performance - ASTM C1363-2011 (U Value)
- Steady- State Thermal Transmission - ASTM C518-10 (R Value)

Short and Long-term Goals

- Provide a simple solution for High Performance Attics (HPA)
 - Allow builders to maintain current construction practices
- Simplify modeling and compliance credit for GHR and similar HPA products in CA compliance software
- Develop partnerships with builders, manufacturers and utilities
- Create a more economical and energy efficient method of building for today and future generations

Questions?



Lawrence Penner

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Green Hybrid Roofing—"Changing the way we build to live"

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